

Claims

1. A polymer blend comprising
 - (a) 1 – 99% by weight of a copolymer of ethylene and an alpha olefin having from 3 to 10 carbon atoms, said copolymer having
 - (iv) a density in the range 0.905 to 0.940 g cm⁻³,
 - 5 (v) a melt elastic modulus G' ($G'' = 500$ Pa) in the range 10 to 150 Pa, and
 - (vi) a melt index in the range 5 to 50, and
 - (b) from 1 – 99% by weight of a low density polyethylene (LDPE) polymer having a density from 0.914 to 0.928 g cm⁻³wherein the sum of (a) and (b) is 100 %.
- 10 2. A polymer blend according to claim 1 wherein the copolymer of component (a) has a density in the range 0.907 to 0.915.
3. A polymer blend according to claim 1 wherein the copolymer of component (a) has a melt index in the range 12 to 50.
4. A polymer blend according to claim 1 wherein the copolymer of component (a)
- 15 has a melt elastic modulus G' in the range 11 to 90 Pa.
5. A polymer blend according to any of the preceding claims wherein the copolymer of component (a) has a flow activation energy (E_a) in the range 28 to 50.
6. A polymer blend according to any of the preceding claims wherein the copolymer of component (a) has a M_w/M_n in the range 2 to 3.5.
- 20 7. A polymer blend according to any one of the preceding claims wherein the copolymer of component (a) exhibits more than one differential scanning calorimetry (DSC) melting peaks between 30° and 150°C.
8. A polymer blend according to any of the preceding claims wherein the LDPE of

component (b) has a melt index in the range 0.1 to 25.

9. A polymer blend according to any of the preceding claims wherein the LDPE of component (b) has a melt elastic modulus G' in the range 80 to 200 Pa.

10. A polymer blend according to any of the preceding claims wherein the ratio of component (a) to component (b) is in the range 60:75 to 40:25 by weight.

11. A polymer blend according to any of the preceding claims wherein the blend has a melt elastic modulus G' in the range 30 to 200 Pa.

12. A polymer blend according to claim 11 wherein the blend has a melt elastic modulus G' in the range 30 to 200 Pa.

13. A polymer blend according to claim 12 wherein the blend has a melt elastic modulus G' in the range 60 to 120 Pa.

14. A polymer blend according to claim 13 wherein the melt elastic modulus G' is in the range 75-100 Pa.

15. A polymer blend comprising

(a) 1–99% by weight of a copolymer of ethylene and an alpha olefin having from 3 to 10 carbon atoms, said copolymer having

(vii) a density in the range 0.905 to 0.940 g cm⁻³,

(viii) a melt elastic modulus G' ($G'' = 500$ Pa) in the range 10 to 150 Pa, and

(ix) a melt index in the range 5 to 50, and

(b) from 1–99% by weight of a low density polyethylene (LDPE) polymer having a density from 0.914 to 0.928 g cm⁻³, and

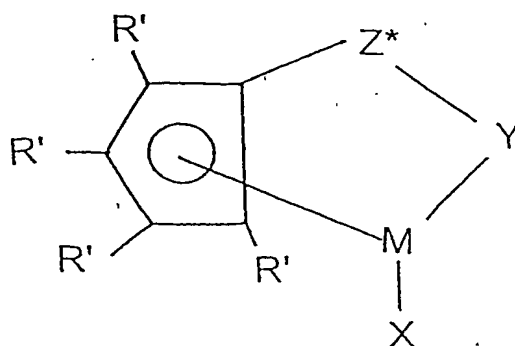
(c) from 0–98% by weight of a copolymer of ethylene and an alpha-olefin having 3 to 10 carbon atoms or a low density polyethylene (LDPE)

wherein the sum of (a), (b) and (c) is 100 %.

16. A polymer blend according to any of the preceding claims wherein the copolymer of component (a) is prepared by use of a catalyst system comprising a transition metal compound.

17. A polymer blend according to claim 16 wherein the transition metal compound is a metallocene.

18. A polymer blend according to claim 17 wherein the metallocene has the general formula



wherein:-

R' each occurrence is independently selected from hydrogen, hydrocarbyl, silyl, germyl, halo, cyano, and combinations thereof, said R' having up to 20
 5 nonhydrogen atoms, and optionally, two R' groups (where R' is not hydrogen, halo or cyano) together form a divalent derivative thereof connected to adjacent positions of the cyclopentadienyl ring to form a fused ring structure;

X is a neutral η^4 bonded diene group having up to 30 non-hydrogen atoms, which forms a π -complex with M;

10 Y is -O-, -S-, -NR*-, -PR*-;

M is titanium or zirconium in the + 2 formal oxidation state;

Z* is SiR*₂, CR*₂, SiR*₂SIR*₂, CR*₂CR*₂, CR*=CR*, CR*₂SIR*₂, or GeR*₂, wherein:

R* each occurrence is independently hydrogen, or a member selected from
 15 hydrocarbyl, silyl, halogenated alkyl, halogenated aryl, and combinations thereof, said R* having up to 10 non-hydrogen atoms, and optionally, two R* groups from Z* (when R* is not hydrogen), or an R* group from Z* and an R* group from Y form a ring system.

19. A polymer blend according to claims 16 to 18 wherein the copolymer is
 20 prepared in the gas phase.

20. A polymer blend according to any of the preceding claims wherein the low density polyethylene (LDPE) of component (b) is prepared by a high pressure process.

21. An extrusion coating comprising a polymer blend comprising

(a) 1 – 99% by weight of a copolymer of ethylene and an alpha olefin having from 3 to 10 carbon atoms, said copolymer having

- (i) a density in the range 0.905 to 0.940 g cm⁻³,
- (ii) a melt elastic modulus G' (G'' = 500 Pa) in the range 10 to 150 Pa, and
- (iii) a melt index in the range 5 to 50, and

(b) from 1 – 99% by weight of a low density polyethylene (LDPE) polymer having a density from 0.914 to 0.928 g cm⁻³

wherein the sum of (a) and (b) is 100 %.

22. An extrusion coating comprising a polymer blend comprising

(a) 1-99% by weight of a copolymer of ethylene and an alpha olefin having from 3 to 10 carbon atoms, said copolymer having

- (i) a density in the range 0.905 to 0.940 g cm³,
- (ii) a melt elastic modulus G' (G'' = 500 Pa) in the range 10 to 150 Pa, and
- (iii) a melt index in the range 5 to 50,

(b) from 1-99% by weight of a low density polyethylene (LDPE) polymer having a density from 0.914 to 0.928 g cm⁻³, and

(c) from 0.98% by weight of a copolymer of ethylene and an alpha olefin having 3 to 10 carbon atoms or a low density polyethylene (LDPE) wherein the sum of (a), (b) and (c) is 100%